

=> FILE REG
FILE 'REGISTRY' ENTERED AT 16:45:28 ON 21 FEB 2008
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FILE 'REGISTRY' ENTERED AT 16:31:40 ON 21 FEB 2008
E CHLOROSULFONYL ISOCYANATE/CN
L1 1 S E3
E SULFUR TRIOXIDE/CN
L2 1 S E3
L3 362 S (S (L) O)/ELS (L) 2/ELC.SUB
E CYANOGEN CHLORIDE/CN
L4 1 S E3

FILE 'HCA' ENTERED AT 16:34:30 ON 21 FEB 2008
L5 11690 S L2
L6 126713 S L3
L7 1456 S L4
L8 1400 S L1
L9 49 S L1/P
L10 90 S (L5 OR L6) AND L7
L11 11 S L10 AND L8
L12 10 S L10 AND L9
L13 2277 S L2 (L) RACT/RL
L14 17742 S L3 (L) RACT/RL
L15 471 S L4 (L) RACT/RL
L16 10 S (L13 OR L14) AND L15
L17 7 S L16 AND L8
L18 7 S L16 AND L9

FILE 'REGISTRY' ENTERED AT 16:37:42 ON 21 FEB 2008
E CYANOGEN FLUORIDE/CN
L19 1 S E3
E CYANOGEN BROMIDE/CN
L20 1 S E3
E CYANOGEN IODIDE/CN
L21 1 S E3

FILE 'HCA' ENTERED AT 16:39:13 ON 21 FEB 2008
L22 3272 S L19 OR L20 OR L21
L23 53 S (L5 OR L6) AND L22
L24 1 S L23 AND L8

L25 1664 S (L19 OR L20 OR L21) (L) RACT/RL
L26 10 S (L13 OR L14) AND L25
L27 0 S L26 AND L8
L28 14 S L11 OR L12 OR L16 OR L17 OR L18 OR L24

=> FILE HCA
FILE 'HCA' ENTERED AT 16:45:37 ON 21 FEB 2008
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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=> D L28 1-14 BIB ABS HITSTR HITIND

L28 ANSWER 1 OF 14 HCA COPYRIGHT 2008 ACS on STN
AN 143:99273 HCA Full-text
TI Method for producing chlorosulfonyl isocyanate
IN Sugawara, Mutsumi; Imagawa, Tsutomu; Masui, Fumitaka
PA Nippon Soda Co., Ltd., Japan
SO PCT Int. Appl., 10 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI WO 2005058806 A1 20050630 WO 2004-JP19132

200412

15

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1695958 A1 20060830 EP 2004-807489

200412

15

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,
PL, SK, BA, HR, IS, YU

CN 1894205 A 20070110 CN 2004-80037354

200412

15

IN 2006KN01591 A 20070504 IN 2006-KN1591

200606

08

KR 783343 B1 20071207 KR 2006-711648

200606

13

US 2007286789 A1 20071213 US 2007-583194

200706

19

PRAI JP 2003-417611 A 20031216
WO 2004-JP19132 W 20041215

OS CASREACT 143:99273

AB This document discloses a method for producing chlorosulfonyl isocyanate wherein chlorocyanogen is reacted with sulfur trioxide to form chlorosulfonyl isocyanate, characterized in that chlorosulfonyl isocyanate or a fluid contg. chlorosulfonyl isocyanate is used as a solvent for the reaction, and approx. equimolar amts. of sulfur trioxide and chlorocyanogen, which are resp. dild. with chlorosulfonyl isocyanate or a fluid contg. chlorosulfonyl isocyanate, are simultaneously fed under reflux to the reaction system. The above method can be used for producing chlorosulfonyl isocyanate (purity : 99%) in high yield and with good operability while achieving savings in the equipment and in the effort for temp. control.

IT 506-77-4, Chlorocyanogen 7446-11-9, Sulfur trioxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(method for producing chlorosulfonyl isocyanate by reaction of chlorocyanogen with sulfur trioxide in chlorosulfonyl isocyanate as solvent)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)

C1—C≡N

RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)

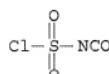


IT 1189-71-5P, Chlorosulfonyl isocyanate

RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PUR (Purification or recovery); PREP (Preparation); USES (Uses)
(reactant and solvent; method for producing chlorosulfonyl isocyanate by reaction of chlorocyanogen with sulfur trioxide in chlorosulfonyl isocyanate as solvent)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IC ICM C07C303-34

ICS C07C307-00

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

IT 506-77-4, Chlorocyanogen 7446-11-9, Sulfur trioxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(method for producing chlorosulfonyl isocyanate by reaction of chlorocyanogen with sulfur trioxide in chlorosulfonyl isocyanate as solvent)

IT 1189-71-5P, Chlorosulfonyl isocyanate

RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PUR (Purification or recovery); PREP (Preparation); USES (Uses)
(reactant and solvent; method for producing chlorosulfonyl isocyanate by reaction of chlorocyanogen with sulfur trioxide in chlorosulfonyl isocyanate as solvent)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L28 ANSWER 2 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 142:197901 HCA Full-text

TI Product class 13: quinazolines

AU Kikelj, D.

CS Germany
SO Science of Synthesis (2004), 16, 573-749
CODEN: SSCYJ9
PB Georg Thieme Verlag
DT Journal; General Review
LA English
AB A review. Prepn. of quinazolines by ring closure and ring transformation reactions as well as aromatization and substituent modification is given.
IT 7446-09-5, Sulfur dioxide, uses
RL: CAT (Catalyst use); USES (Uses)
(prepn. of quinazolines)
RN 7446-09-5 HCA
CN Sulfur dioxide (CA INDEX NAME)

O=====S=====O

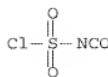
IT 506-68-3, Cyanogen bromide ((CN)Br) 506-77-4,
Cyanogen chloride ((CN)Cl) 1189-71-5, Sulfuryl chloride
isocyanate
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of quinazolines)
RN 506-68-3 HCA
CN Cyanogen bromide ((CN)Br) (CA INDEX NAME)

Br—C≡N

RN 506-77-4 HCA
CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)

Cl—C≡N

RN 1189-71-5 HCA
CN Sulfuryl chloride isocyanate (CA INDEX NAME)



CC 28-0 (Heterocyclic Compounds (More Than One Hetero Atom))
IT 67-72-1 77-48-5 84-58-2 93-59-4, Benzenecarboperoxoic acid
94-36-0, uses 98-09-9, Benzenesulfonyl chloride 102-69-2
109-95-5 110-86-1, Pyridine, uses 118-75-2, uses 128-08-5
143-33-9, Sodium cyanide (Na(CN)) 144-55-8, Carbonic acid
monosodium salt, uses 333-20-0 429-41-4 459-73-4 501-65-5
540-69-2 546-67-8 590-28-3 598-41-4 603-35-0, uses
657-84-1 762-21-0 865-33-8 865-47-4 872-50-4, uses
999-97-3 1020-84-4 1066-33-7, Ammonium bicarbonate 1112-67-0
1122-58-3 1309-48-4, Magnesium oxide (MgO), uses 1313-13-9,
Manganese oxide (MnO₂), uses 1313-82-2, Sodium sulfide (Na₂S),
uses 1333-82-0, Chromium oxide (CrO₃) 1455-13-6, Methanol-d
1499-10-1 1576-35-8 1762-95-4 2052-49-5, Tetrabutylammonium
hydroxide 2311-91-3 3481-12-7, Sodium naphthalenide, uses
4039-32-1 5470-11-1 6674-22-2 7181-87-5 7439-89-6, Iron,
uses 7440-23-5, Sodium, uses 7440-66-6, Zinc, uses
7446-09-5, Sulfur dioxide, uses 7450-69-3 7550-45-0,
Titanium chloride (TiCl₄) (T-4)-, uses 7601-90-3, Perchloric acid,
uses 7631-86-9, Silica, uses 7631-90-5 7646-78-8, uses
7646-85-7, Zinc chloride (ZnCl₂), uses 7647-14-5, Sodium chloride
(NaCl), uses 7681-82-5, Sodium iodide (NaI), uses 7697-37-2,
Nitric acid, uses 7705-07-9, Titanium chloride (TiCl₃), uses
7705-08-0, Iron chloride (FeCl₃), uses 7719-09-7, Thionyl chloride
7719-12-2, Phosphorous trichloride 7723-14-0, Phosphorus, uses
7727-54-0 7757-79-1, Nitric acid potassium salt, uses 7758-02-3,
Potassium bromide (KBr), uses 7761-88-8, Nitric acid silver(1+)
salt, uses 7772-99-8, Tin chloride (SnCl₂), uses 7782-44-7,
Oxygen, uses 7782-49-2, Selenium, uses 7782-50-5, Chlorine, uses
7782-92-5, Sodium amide (Na(NH₂)) 7783-93-9 7789-20-0, Water-d2
7789-60-8, Phosphorous tribromide 7790-94-5, Chlorosulfuric acid
7803-49-8, Hydroxylamine, uses 10026-13-8 10028-15-6, Ozone,
uses 10034-85-2, Hydriodic acid 10035-10-6, Hydrobromic acid,
uses 10294-33-4 10544-50-0, uses 12027-06-4, Ammonium iodide
13746-66-2 13826-86-3 13840-56-7, Sodium borate 14014-06-3,
Sodium hydroxide (Na(OD)) 14217-21-1, Trisodium hexacyanoferrate
15525-45-8 15857-57-5 16721-80-5, Sodium sulfide (Na(SH))
17242-52-3, Potassium amide (K(NH₂)) 20667-12-3, Silver oxide
(Ag₂O) 21908-53-2, Mercury oxide (HgO) 26386-88-9 26628-22-8,
Sodium azide (Na(N₃)) 29154-12-9 337913-25-4 573672-35-2,

Sodium peroxide (Na(O₂))

RL: CAT (Catalyst use); USES (Uses)
(prepns. of quinazolines)

IT 50-00-0, Formaldehyde, reactions 55-21-0, Benzamide 59-48-3
60-34-4 60-35-5, Acetamide, reactions 62-53-3, Benzenamine,
reactions 62-55-5, Ethanethioamide 62-56-6, Thiourea, reactions
64-17-5, Ethanol, reactions 64-18-6, Formic acid, reactions
64-19-7, Acetic acid, reactions 64-67-5 65-45-2 66-99-9,
2-Naphthalenecarboxaldehyde 67-56-1, Methanol, reactions
67-64-1, 2-Propanone, reactions 67-66-3, reactions 70-11-1
71-23-8, 1-Propanol, reactions 71-36-3, 1-Butanol, reactions
74-88-4, reactions 74-89-5, Methanamine, reactions 74-90-8,
Hydrocyanic acid, reactions 74-96-4 75-03-6 75-05-8,
Acetonitrile, reactions 75-07-0, Acetaldehyde, reactions
75-15-0, Carbon disulfide, reactions 75-24-1 75-36-5, Acetyl
chloride 75-44-5, Carbonyl dichloride 75-52-5, reactions
75-77-4, reactions 75-87-6 75-98-9 77-78-1 78-39-7
78-83-1, reactions 78-93-3, 2-Butanone, reactions 79-04-9
79-05-0, Propanamide 79-22-1 80-48-8 80-62-6 84-26-4
87-25-2 88-68-6 89-77-0 91-56-5, 1H-Indole-2,3-dione 93-97-0
95-92-1 96-32-2 97-39-2 98-74-8 98-83-9, reactions
98-86-2, reactions 98-88-4, Benzoyl chloride 98-92-0,
3-Pyridinecarboxamide 100-10-7 100-36-7 100-39-0 100-44-7,
reactions 100-46-9, Benzenemethanamine, reactions 100-47-0,
Benzonitrile, reactions 100-48-1, 4-Pyridinecarbonitrile
100-52-7, Benzaldehyde, reactions 100-54-9, 3-Pyridinecarbonitrile
100-58-3 100-61-8, reactions 101-99-5 102-06-7 102-85-2
103-71-9, reactions 103-72-0 103-76-4, 1-Piperazineethanol
103-81-1, Benzeneacetamide 103-84-4 104-85-8 104-88-1,
reactions 104-94-9 105-36-2 105-39-5 105-53-3 105-56-6
106-49-0, reactions 106-95-6, reactions 107-10-8, Propylamine,
reactions 107-12-0, Propanenitrile 107-14-2 107-19-7,
2-Propyn-1-ol 107-59-5 107-92-6, Butanoic acid, reactions
108-24-7 109-51-3, Pentanimidamide 109-65-9 109-72-8,
reactions 109-73-9, 1-Butanamine, reactions 109-75-1,
3-Butenenitrile 110-91-8, Morpholine, reactions 113-00-8,
Guanidine 115-08-2, Methanethioamide 115-80-0 116-15-4
118-48-9, 2H-3,1-Benzoxazine-2,4(1H)-dione 118-74-1 118-92-3
120-14-9 120-92-3, Cyclopentanone 120-94-5 121-44-8, reactions
121-45-9 122-51-0 122-52-1 123-11-5, reactions 123-75-1,
Pyrrolidine, reactions 124-38-9, Carbon dioxide, reactions
124-40-3, reactions 124-41-4 124-63-0, Methanesulfonyl chloride
126-98-7 134-20-3 135-02-4 139-02-6 140-29-4,
Benzeneacetonitrile 140-89-6 141-43-5, reactions 141-52-6
141-97-9 143-37-3, Ethanimidamide 147-47-7 271-44-3,
1H-Indazole 290-87-9, 1,3,5-Triazine 334-88-3 353-42-4
357-83-5 369-57-3 394-47-8 407-25-0 420-04-2, Cyanamide

445-27-2 459-44-9 461-58-5 463-52-5, Methanimidamide
 463-58-1, Carbon oxide sulfide (COS) 479-33-4 496-15-1
 504-74-5, Imidazolidine 506-68-3, Cyanogen bromide
 ((CN)Br) 506-77-4, Cyanogen chloride ((CN)Cl) 507-09-5,
 Ethanethioic acid, reactions 513-35-9 525-76-8 529-23-7
 533-68-6 535-11-5 536-90-3 541-41-3 542-69-8 544-92-3,
 Copper cyanide (Cu(CN)) 551-93-9 555-16-8, reactions 556-56-9
 556-64-9 563-47-3 563-83-7 574-17-4 587-65-5 591-51-5
 598-21-0 604-75-1 606-18-8 607-69-2 609-15-4 609-65-4
 609-85-8 610-68-4 612-24-8 614-76-6 616-38-6 617-90-3,
 2-Furancarbonitrile 618-39-3, Benzenecarboximidamide 619-72-7
 621-06-7 621-30-7 622-16-2 623-49-4 626-36-8 626-67-5
 627-26-9 628-17-1 628-73-9, Hexanenitrile 630-08-0, Carbon
 monoxide, reactions 636-04-4 645-54-5, Benzeneethanethioamide
 670-54-2, Ethenetetracarbonitrile, reactions 693-02-7, 1-Hexyne
 693-03-8 705-62-4 719-59-5 747-48-8 762-42-5 766-05-2,
 Cyclohexanecarbonitrile 771-99-3 784-45-2 811-51-8 828-51-3
 873-74-5 888-71-1 917-64-6 922-64-5 922-67-8 925-90-6
 926-64-7 933-52-8 951-48-4 954-91-6 996-82-7 1000-84-6
 1121-60-4, 2-Pyridinecarboxaldehyde 1122-85-6 1125-43-5
 1187-46-8 1189-71-5, Sulfuryl chloride isocyanate
 1192-95-6 1199-00-4 1206-17-3 1206-55-9 1424-52-8
 1441-87-8 1467-79-4 1527-91-9 1530-88-7, 1-
 Pyrrolidinecarbonitrile 1530-89-8, 4-Morpholinecarbonitrile
 1589-82-8 1614-92-2 1640-52-4 1640-59-1 1663-61-2
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of quinazolines)

RE.CNT 1014 THERE ARE 1014 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L28 ANSWER 3 OF 14 HCA COPYRIGHT 2008 ACS on STN
 AN 138:136934 HCA Full-text
 TI Preparation of high-purity chlorosulfonyl isocyanate with high yield
 and safety
 IN Nakamura, Akira; Hasegawa, Hiroshi; Kon, Kazushige; Iwata, Masaki
 PA Kuraray Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 2003040854 A 20030213 JP 2001-229825

200107

30

PRAI JP 2001-229825

20010730

OS CASREACT 138:136934

AB ClSO₂NCO is prep'd. by (1) condensation of CNCl with SO₃, (2) distn. of the reaction mixt. under ambient pressure, and (3) distn. of the crude ClSO₂NCO under ambient pressure. The residue obtained in the 2nd step is distd. under ambient pressure, then the obtained distillates are mixed with low-b. distillates obtained in the 2nd and 3rd steps, and residues of the 3rd step, and returned to the reaction mixt. of the 1st step. By this method, the vol. of waste solns. contg. toxic substances is much smaller than conventional method.

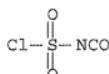
IT 1189-71-5P, Chlorosulfonyl isocyanate

RL: IMF (Industrial manufacture); PUR (Purification or recovery);
PREP (Preparation)

(prepn. of high-purity ClSO₂NCO from CNCl and SO₃ with recovering
and reusing low-b. distillates)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride 7446-11-9, Sulfuric
anhydride, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(prepn. of high-purity ClSO₂NCO from CNCl and SO₃ with recovering
and reusing low-b. distillates)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)

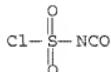


IC ICM C07C303-36
 ICS C07C311-65
 CC 23-12 (Aliphatic Compounds)
 IT 1189-71-5P, Chlorosulfonyl isocyanate
 RL: IMF (Industrial manufacture); PUR (Purification or recovery);
 PREP (Preparation)
 (prepn. of high-purity ClSO₂NCO from CNCl and SO₃ with recovering
 and reusing low-b. distillates)
 IT 506-77-4, Cyanogen chloride 7446-11-9, Sulfuric
 anhydride, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of high-purity ClSO₂NCO from CNCl and SO₃ with recovering
 and reusing low-b. distillates)

L28 ANSWER 4 OF 14 HCA COPYRIGHT 2008 ACS on STN
 AN 132:167972 HCA Full-text
 TI Preparation of chlorosulfonyl isocyanate with high yield
 IN Ogawa, Takeshi; Yano, Koji
 PA Sumitomo Chemical Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000053630	A	20000222	JP 1999-132570	199905 13
PRAI	JP 1998-132146	A	19980514		
	JP 1998-151237	A	19980601		
AB	Title compd. is prep'd. by reaction of cyanogen chloride with sulfur trioxide in the presence of the same compd. at a temp. range of -10°-17°.				
IT	506-77-4, Cyanogen chloride RL: RCT (Reactant); RACT (Reactant or reagent) (for prepn. of chlorosulfonyl isocyanate with high yield)				
RN	506-77-4 HCA				
CN	Cyanogen chloride ((CN)Cl) (CA INDEX NAME)				

IT 1189-71-5P, Chlorosulfonyl isocyanate
RL: IMF (Industrial manufacture); PREP (Preparation)
(prepn. of chlorosulfonyl isocyanate with high yield)
RN 1189-71-5 HCA
CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(γ -type; for prepn. of chlorosulfonyl isocyanate with high
yield)
RN 7446-11-9 HCA
CN Sulfur trioxide (CA INDEX NAME)



IC ICM C07C307-00
ICS C07C303-06
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
IT 506-77-4, Cyanogen chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(for prepn. of chlorosulfonyl isocyanate with high yield)
IT 1189-71-5P, Chlorosulfonyl isocyanate
RL: IMF (Industrial manufacture); PREP (Preparation)
(prepn. of chlorosulfonyl isocyanate with high yield)
IT 7446-11-9, Sulfur trioxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(γ -type; for prepn. of chlorosulfonyl isocyanate with high
yield)

L28 ANSWER 5 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 118:236411 HCA Full-text

TI Process and apparatus for continuous preparation of chlorosulfonyl
isocyanate

IN Cieslewski, Tomasz; Chuck, Roderick; Gross, Max; Galli, Marco Paolo
PA Lonza AG, Switz.

SO Patentschrift (Switz.), 5 pp.
CODEN: SWXXAS

DT Patent
LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CH 680292	A5	19920731	CH 1990-3195	199010 04

PRAI CH 1990-3195 19901004

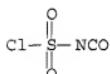
AB The title process for prepn. of ClSO₂NCO (I) involves: (1) reaction of SO₃(g) with ClCN(g) [mol ratio (1.1-1.7):1] at 30-160° in a I-contg., liq.-filled reaction zone; (2) removal of resulting reaction heat by a distn. column; (3) cooling of vapors exiting the column to 110° and condensation in a 1st cooling zone; (4) feeding part of the resultant crude I condensate to the lift zone of a 2nd distn. column, and recycling the other part to the 1st column; and (5) taking off pure I between the lift and drip zones of the 2nd column, and condensing it in a cooling zone. An app. diagram is given.

IT 1189-71-5P, Chlorosulfonyl isocyanate

RL: PREP (Preparation)
(manuf. of, process and app. for)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with cyanogen chloride, process and app. for)

RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfur trioxide, process and app. for)
RN 506-77-4 HCA
CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IC ICM C07C311-65
ICS B01J012-00
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23
IT 1189-71-5P, Chlorosulfonyl isocyanate
RL: PREP (Preparation)
(manuf. of, process and app. for)
IT 7446-11-9, Sulfur trioxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with cyanogen chloride, process and app. for)
IT 506-77-4, Cyanogen chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfur trioxide, process and app. for)

L28 ANSWER 6 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 117:170790 HCA Full-text

TI Preparation of chlorosulfonyl isocyanate
IN Nakamura, Akira; Ono, Matsuo; Ataka, Toshihide
PA Kuraray Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 04164063	A	19920609	JP 1990-292531	199010 29

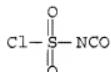
JP 3161723 B2 20010425
PRAI JP 1990-292531 19901029

OS CASREACT 117:170790

AB The title compd. (I) is prep'd. by treating SO₃ with ClCN in Cl-3
chloro-contg. satd. hydrocarbons at 10-50°. A reactor contg. CH₂C₁₂
was simultaneously fed with SO₃ and ClCN at 25-35° over 4 h, then

stirred at 25-30° for 1 h to give 89% I (based on ClCN) of 98% purity.

IT 1189-71-5P, Chlorosulfonyl isocyanate
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of, from sulfuric anhydride and cyanogen chloride)
RN 1189-71-5 HCA
CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 7446-11-9, Sulfuric anhydride, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with cyanogen chloride, chlorosulfonyl isocyanate
from, solvents in)
RN 7446-11-9 HCA
CN Sulfur trioxide (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfuric anhydride, chlorosulfonyl isocyanate
from, solvents in)
RN 506-77-4 HCA
CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IC ICM C07C381-00
CC 23-12 (Aliphatic Compounds)
IT 1189-71-5P, Chlorosulfonyl isocyanate
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of, from sulfuric anhydride and cyanogen chloride)
IT 7446-11-9, Sulfuric anhydride, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with cyanogen chloride, chlorosulfonyl isocyanate
from, solvents in)

IT 506-77-4, Cyanogen chloride

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfuric anhydride, chlorosulfonyl isocyanate
from, solvents in)

L28 ANSWER 7 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 112:79957 HCA Full-text

TI Preparation of chlorosulfonyl isocyanate

IN Nakamura, Akira; Ono, Matsuo; Ataka, Toshihide; Noguchi, Shizuo;
Shirakawa, Hideo; Segawa, Hirozo

PA Kyowa Gas Chemical Industry Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 01228955	A	19890912	JP 1988-55404	198803 09
	JP 05079059	B	19931101		
	CA 2024796	A1	19920307	CA 1990-2024796	199009 06
	CA 2024796	C	20010227		
	US 5118487	A	19920602	US 1990-580868	199009 11

PRAI JP 1988-55404 19880309

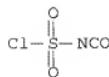
AB ClSO₂NCO, useful in the manuf. of agrochems., pharmaceuticals,
sweeteners, resins, etc., is prep'd. from CNCl and SO₃ at 10-50°.
Adding 61.5 g CNCl and 73.1 g SO₃ to 8 g SO₃ at 25-35° during 4-5 h
and stirring 1 h gave 87% ClSO₂NCO.

IT 1189-71-5P, Chlorosulfonyl isocyanate

RL: IMF (Industrial manufacture); PREP (Preparation)
(prepn. of, from cyanogen chloride and sulfur trioxide)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with cyanogen chloride, chlorosulfonyl isocyanate
from)
RN 7446-11-9 HCA
CN Sulfur trioxide (CA INDEX NAME)



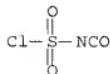
IT 506-77-4, Cyanogen chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfur trioxide, chlorosulfonyl isocyanate
from)
RN 506-77-4 HCA
CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IC ICM C07C161-00
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23
IT 1189-71-5P, Chlorosulfonyl isocyanate
RL: IMF (Industrial manufacture); PREP (Preparation)
(prepn. of, from cyanogen chloride and sulfur trioxide)
IT 7446-11-9, Sulfur trioxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with cyanogen chloride, chlorosulfonyl isocyanate
from)
IT 506-77-4, Cyanogen chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfur trioxide, chlorosulfonyl isocyanate
from)

L28 ANSWER 8 OF 14 HCA COPYRIGHT 2008 ACS on STN
 AN 111:9240 HCA Full-text
 T1 Continuous gas-phase manufacture of chlorosulfonyl isocyanate
 IN Niermann, Hermann; Diskowski, Herbert; Roszinski, Hilmar; Tiedemann,
 Jens; Martin, Willi
 PA Hoechst A.-G., Fed. Rep. Ger.
 SO Eur. Pat. Appl., 7 pp.
 CODEN: EPXXDW
 DT Patent
 LA German
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 294613	A1	19881214	EP 1988-107713	198805 13
	EP 294613	B1	19910327		
	R: AT, BE, CH, DE, ES, FR, GB, IT, LI, NL				
	DE 3719303	A1	19881229	DE 1987-3719303	198706 10
	AT 62010	T	19910415	AT 1988-107713	198805 13
PRAI	DE 1987-3719303	A	19870610		
	EP 1988-107713	A	19880513		
AB	Chlorosulfonyl isocyanate is prep'd. in a continuous multistep process by the gas-phase reaction of a 1:1 molar ratio of SO ₃ and ClCN (prep'd. from aq. HCN and Cl). A process schematic is presented.				
IT	1189-71-5P, Chlorosulfonyl isocyanate RL: PREP (Preparation) (manuf. of, from chlorocyanide and sulfur trioxide, gas-phase)				
RN	1189-71-5 HCA				
CN	Sulfuryl chloride isocyanate (CA INDEX NAME)				



IT 506-77-4P, Chlorocyanide
 RL: PREP (Preparation)

(prepn. and gas-phase reaction of, with sulfur trioxide)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with chlorocyanide, gas-phase)

RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)



IC ICM C07C143-828

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 48

IT 1189-71-5P, Chlorosulfonyl isocyanate

RL: PREP (Preparation)
(manuf. of, from chlorocyanide and sulfur trioxide, gas-phase)

IT 506-77-4P, Chlorocyanide

RL: PREP (Preparation)
(prepn. and gas-phase reaction of, with sulfur trioxide)

IT 7446-11-9, Sulfur trioxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with chlorocyanide, gas-phase)

L28 ANSWER 9 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 109:230287 HCA Full-text

TI Manufacture of chlorosulfonyl isocyanate

IN Nakamura, Akira; Ono, Matsuo; Segawa, Hirozo

PA Kyowa Gas Chemical Industry Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

PI JP 63077855 A 19880408 JP 1986-219412

198609
19

JP 07002709 B 19950118

PRAI JP 1986-219412 19860919

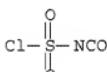
AB In the manuf. of the title compd. (I) from SO₃ and CNCl, CNCl is added to SO₃(l) and the reaction is carried out at 20-50°. The compd. is useful as intermediate for pharmaceuticals, agrochems., and sweeteners, and as modifiers for synthetic fibers and resins. Thus, 62.9 g CNCl(g) was introduced over 2 h into 79.5 g γ-SO₃(l) at 25-35° with stirring and the mixt. was further stirred at 25-30° for 0.5 h to give 119.1 g I.

IT 1189-71-5P, Chlorosulfonyl isocyanate

RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of, from sulfur trioxide and cyanogen chloride, temp.
control in)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with cyanogen chloride)

RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfur trioxide)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IC ICM C07C161-00
ICS C01C003-14
CC 23-12 (Aliphatic Compounds)
IT 1189-71-5P, Chlorosulfonyl isocyanate
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of, from sulfur trioxide and cyanogen chloride, temp.
control in)
IT 7446-11-9, Sulfur trioxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with cyanogen chloride)
IT 506-77-4, Cyanogen chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfur trioxide)

L28 ANSWER 10 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 101:180948 HCA Full-text

OREF 101:27225a,27228a

TI Final state distributions in the photodissociation of triatomic
molecules

AU Bersohn, R.

CS Dep. Chem., Columbia Univ., New York, NY, 10027, USA

SO Journal of Physical Chemistry (1984), 88(22), 5145-9

CODEN: JPCHAX; ISSN: 0022-3654

DT Journal

LA English

AB The theor. core of photodissocn. dynamics is the process ABC + hv → A + BC. A no. of final state distributions for this process were measured. In order to compare these diverse distributions the av. fractions of the available energy released into vibration, rotation, and translation were calcd. From a triangular plot of these data 2 general conclusions emerge. The first is that release of a large fraction of the available energy as rotation is rare. The second is that photodissocn. of mols. in which a single bond is broken results in relatively high translational energy release whereas for mols. in which a double bond is broken most of the available energy is released as vibration.

IT 506-77-4 7446-09-5, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(energy partitioning during photodissocn. of, calcns. for)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)

RN 7446-09-5 HCA
CN Sulfur dioxide (CA INDEX NAME)

O=S=O

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)
Section cross-reference(s): 73
IT 74-88-4, reactions 74-90-8, reactions 75-15-0, reactions
124-38-9, reactions 463-58-1 506-68-3 506-77-4
506-78-5 2696-92-6 7446-09-5, reactions 7732-18-5,
reactions 7772-99-8, reactions 7783-06-4, reactions
10028-15-6, reactions 10102-44-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(energy partitioning during photodissocn. of, calcns. for)

L28 ANSWER 11 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 81:70824 HCA Full-text

OREF 81:11243a,11246a

TI Chemical lasers produced from O(3P) atom reactions. IV. Carbon
monoxide laser emission from the oxygen atom + cyanogen reaction

AU Shortridge, R. G.; Lin, M. C.

CS Chem. Div., Nav. Res. Lab., Washington, DC, USA

SO Journal of Physical Chemistry (1974), 78(15), 1451-6

CODEN: JPCHAX; ISSN: 0022-3654

DT Journal

LA English

AB CO ir stimulated emission was obsd. from flash-initiated SO₂ + XCN (X = Br, Cl, and CN) mixts. About 36 P(J) lines of vibrational-rotational transitions were present between Au (13-12) and Au (5-4). Diln. in SF₆ greatly enhanced the laser emission, whereas only slight enhancement was obtained from such diluents as Ar and He. Mass spectrometric anal. showed that .apprx.20% conversion of XCN occurred per 5 flashes at 2.1 kJ and that CO, NO, CO₂, and probably some N₂ were produced. The reaction, O(3P) + CN(X₂Σ) → CO.dag. + N(4S), ΔH[°] = -74 kcal/mol, was the major pumping reaction of this system, and O(3P) + CN → N(2D) + CO.dag., ΔH[°] = -19 kcal/mol, was unimportant on the basis of these laser emission measurements.

IT 506-77-4

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfur dioxide, carbon monoxide laser emission

from flash-initiated)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IT 7446-09-5, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(with cyanogen compds., carbon monoxide laser emission from
flash-initiated)

RN 7446-09-5 HCA

CN Sulfur dioxide (CA INDEX NAME)



CC 73-6 (Spectra by Absorption, Emission, Reflection, or Magnetic
Resonance, and Other Optical Properties)

Section cross-reference(s): 74

IT 460-19-5 506-68-3 506-77-4

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfur dioxide, carbon monoxide laser emission
from flash-initiated)

IT 7446-09-5, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(with cyanogen compds., carbon monoxide laser emission from
flash-initiated)

L28 ANSWER 12 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 78:151993 HCA Full-text

OREF 78:24387a,24390a

TI Reaction of sulfite ions with cyanogen chloride

AU Bailey, Peter L.; Bishop, Edmund

CS Chem. Dep., Univ. Exeter, Exeter, UK

SO Journal of the Chemical Society, Dalton Transactions: Inorganic
Chemistry (1972-1999) (1973), (9), 917-21

CODEN: JCDTBI; ISSN: 0300-9246

DT Journal

LA English

AB Reaction of ClCN with SO₃²⁻ involved formation of a stable adduct.
The kinetics of formation and decomprn. of the adduct were detd., a
reaction scheme proposed, and activation energies detd.

IT 14265-45-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with cyanogen chloride, kinetics and mechanism of)
RN 14265-45-3 HCA
CN Sulfite (8CI, 9CI) (CA INDEX NAME)



IT 506-77-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfite, kinetics and mechanism of)
RN 506-77-4 HCA
CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



CC 67-3 (Catalysis and Reaction Kinetics)
IT 14265-45-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with cyanogen chloride, kinetics and mechanism of)
IT 506-77-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with sulfite, kinetics and mechanism of)

L28 ANSWER 13 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 51:91123 HCA Full-text

OREF 51:16569i,16570a-c

TI New compounds containing nitrogen and sulfur

PA Farberke Hoechst AG vorm. Meister Lucius & Bruning

DT Patent

LA Unavailable

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
	-----	----	-----	-----	-----
PI	GB 774276		19570508	GB 1953-8087	195303

24

GI For diagram(s), see printed CA Issue.

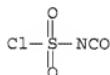
AB Depending upon reaction conditions, one or more of the following compounds may be produced by treating SO₃ with CNCl: OCNSO₂Cl (I), OCNSO₂OSO₂Cl (II), and O.CCl:N.SO₂.N:CCl (III). These compds. are useful as intermediates in the manuf. of textile assistants, pesticides, and pharmaceutical products. I may be prepd. in the following ways: by treating CNCl with SO₃ in a 1:1 molar ratio at 100 to 200°C., by distg. II at atm. pressure, by treating II with CNCl in a 1:1 molar ratio at 120-40°, or by heating II and III in equimolar proportions at 120-50°. II is obtained by filtering the product obtained by treating SO₃ with CNCl at 0° to -30°. From this same reaction product, III is obtained by distn. I, b₉₄, 52°, d₂₀ 1.626, reacts with H₂O violently yielding equimolar quantities of HCl, CO₂, and amidosulfonic acid; II b₁₂ of 67-8°, d₂₀ 1.792, reacts with H₂O to yield equimolar quantities of H₂SO₄, HCl, CO₂ and amidosulfonic acid. When II is heated to 130-50°, it decompns. to SO₃ and I. III sublimes at 120° at atm. pressure, reacts with H₂O slowly to yield 1 mole SO₂(NH₂)₂, 2 moles HCl, and 2 moles of CO₂. When heated in a closed capillary, III liquifies between 120 and 130°, the melt consisting of a mixt. of CNCl, cyanuric chloride, and I.

IT 1189-71-5P, Chlorosulfonic acid, anhydride with isocyanic acid

RL: PREP (Preparation)
(prepn. of)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride
(reaction with SO₃)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide
(reactions of, with ClCN)

RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)



CC 10 (Organic Chemistry)

IT 1189-71-5P, Chlorosulfonic acid, anhydride with isocyanic acid 15435-13-9P, 1,4,3,5-Oxathiadiazine, 2,6-dichloro-, 4,4-dioxide

RL: PREP (Preparation)
(prepn. of)

IT 506-77-4, Cyanogen chloride
(reaction with SO₃)

IT 7446-11-9, Sulfur trioxide
(reactions of, with ClCN)

L28 ANSWER 14 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 51:12977 HCA Full-text

OREF 51:2816c-g

TI The reaction of cyanogen chloride with sulfur trioxide

AU Graf, Roderich

CS Farbwerke Hoechst, Frankfurt a.M.-Hochst, Germany

SO Chemische Berichte (1956), 89, 1071-9

CODEN: CHBEAM; ISSN: 0009-2940

DT Journal

LA Unavailable

AB Passing about 1920 g. SO₃ slowly into 910 g. CNCI first at -5°, later at -15°, in a described app., if necessary adding more CNCI to avoid an excess of SO₃, causes the sepn. of 610 g. ClC:N:SO₂.N:CCl.O (I), long needles, m. about 150° (sealed tube). When heated slowly I decomp. at 120-30° with the formation of OC:NSO₂Cl (II), and CNCI. I is fairly stable in dry air; with H₂O I decomp. with the formation of CO₂, HCl, and (H₂N)SO₂. Fractional distn. of the original filtrate at 95-100 mm. gives about 260 g. II, b. 50-4°, and 2100 g. OC:NSO₂OSO₂Cl (III), b₁₂ 66-70°. Adding dropwise 110 g. SO₂ to 123 g. CNCI in 200 cc. liq. SO₂ at -20 to -25° and filtering the soln. give 105 g. I; fractional distn. of the mother liquor gives a small amt. of II and 88 g. III, b₁₀ 63-4°, leaving a few g. I as a residue. Heating the reaction mixt. of 1110 g. CNCI and 1920 g. SO₃ slowly to 120-5° while simultaneously passing CNCI into the mixt. gives 3200 g. II which is also formed when equimolar amts. of CNCI and SO₃ are allowed to react without cooling. II b₉₄ 52°, b. 106-7°, d₂₀ 1.626, n_{27D} 1.4435; II is stable in closed containers, with H₂O it reacts explosively; in contact with ice, II forms CO₂, HCl, and H₂NSO₃H, m.

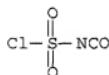
204-5°. II absorbs H₂O with the formation of HO₂CNHSO₂Cl which decomp. to CO₂ and H₂NSO₂Cl; the latter with H₂O gives HCl and H₂NSO₃H. III b12 67-8°, m. -32°, d₂₀ 1.792, n_{27D} 1.447. III and ice react vigorously with the formation of CO₂, H₂SO₄, and H₂NSO₃H. III, heated with CNCl, gives 100% II. The reaction mechanism of the reaction between CNCl and SO₃ is discussed on the basis of the electron theory.

IT 1189-71-5P, Chlorosulfonic acid, anhydride with isocyanic acid

RL: PREP (Preparation)
(prepn. of)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride
(reaction with SO₃)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide
(reactions of, with ClCN)

RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)



CC 10 (Organic Chemistry)

IT 1189-71-5P, Chlorosulfonic acid, anhydride with isocyanic acid 15435-13-9P, 1,4,3,5-Oxathiadiazine, 2,6-dichloro-, 4,4-dioxide

RL: PREP (Preparation)
(prepn. of)

IT 506-77-4, Cyanogen chloride
(reaction with SO₃)

IT 7446-11-9, Sulfur trioxide
(reactions of, with ClCN)